

What Is Claimed Is:

1. A method for reconstructing topological information for a mesh, said mesh comprising a polygonal soup of triangles with sides and vertices,
5 said method comprising the steps of:
building vertex and edge connectivity data;
finding duplicates of vertices;
removing said duplicates of vertices; and
realigning strips of triangles without common
10 vertices.

2. The method as set forth in claim 1 wherein said step of building vertex and edge connectivity data comprises the steps of:
generating a representative index;
15 creating a vertex-neighbor table; and
building an edge-neighbor table.

3. The method as recited in claim 2 wherein said step of generating a representative index comprises eliminating at least one duplication of
20 vertices.

4. The method as recited in claim 2 wherein said step of removing duplicate vertices comprises:
searching for unconnected sides of triangles;
searching for duplicates of the vertices at
25 the ends of said unconnected sides;
replacing all duplicate vertices with original vertices;
adding triangles connected to the duplicate vertices to said original vertices; and

rebuiding said edge-neighbor table for all triangles connected to said original vertices.

5. The method as set forth in claim 4 wherein said step of adding triangles comprises 5 splitting the triangles into new smaller triangles.

6. The method as set forth in claim 4 wherein said step of searching for duplicates comprises searching in said vertex-neighbor table for the closest vertex.

10 7. The method as set forth in claim 6 wherein said step of searching for the closest vertex comprises using an OctTree structure.

15 8. The method as set forth in claim 6 wherein said step of searching for the closest vertex comprises using a log2-complexity search method.

9. The method as set forth in claim 8 wherein said log2-complexity search method comprises using an OctTree structure.